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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/977,512      | 10/12/2001  | David S. Allison     | 0007056-0197/P5940  | 3988             |

32615 7590 05/12/2005

OSHA LIANG L.L.P./SUN  
1221 MCKINNEY, SUITE 2800  
HOUSTON, TX 77010

EXAMINER

VU, TUAN A

ART UNIT PAPER NUMBER

2193

DATE MAILED: 05/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/977,512 | <b>Applicant(s)</b><br>ALLISON, DAVID S. |  |
|                              | <b>Examiner</b><br>Tuan A. Vu        | <b>Art Unit</b><br>2193                  |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>20050303</u> | 6) <input type="checkbox"/> Other: _____  |

*ru*

### DETAILED ACTION

1. This action is responsive to the Applicant's response filed 12/06/2004.

As indicated in Applicant's response, claims 1 and 6 have been amended, and claims 5 and 10 canceled. Claims 1-4, 6-9 are pending in the office action.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bosworth et al., USPN: 6,738,968 ( hereinafter Bosworth), in view of Chambers et al., "An Efficient Implementation of SELF, a Dynamic-Typed Object-Oriented Language Based on Prototypes", In OOPSLA '89 Conference Proceedings, New Orleans, LA, Published as SIGPLAN Notices 24(10), October, 1989 ( hereinafter Chambers – pp. 57-95); and further in view of Stein\_cshl, "Class Java.lang.IllegalAccessException", September 14, 2001, pg. 1-2 ( hereinafter Stein\_cshl) <<http://web.archive.org/web/20010914120713/http://stein.cshl.org/jade/distrib/docs/java.lang.IllegalAccessException.html>>.

As per claim 1, Bosworth discloses a method for binding an object member at runtime comprising:

declaring said object member (e.g. Fig. 3-4 ) in a program written in a dynamically linked object-oriented programming language ( see C++, JIT - col. 5, lines 11-25; class Rect -col. 6, lines 1-10), and running said program comprising:

determining whether said object member is used at runtime (e.g. Fig. 6-8; *runtime* - col. 4, lines 45-50); and

binding at runtime said object member to its reference if said object member is used ( e.g. Fig. 6-8; *runtime* - col. 4, lines 45-50 – Note: checking if object is already provided in lookup storage reads on if said object is accessible).

But Bosworth does not disclose that the program is written in a dynamically-typed programming language. The use of analysis to help optimization of dynamic dispatch or late binding in object-oriented language was a known concept in the art of compiling at the time the invention was made. In a method to support runtime binding and object-oriented program optimization with enhancement supporting dynamic binding analogous to the dual type technique by Bosworth, Chambers discloses the use of message splitting to help dynamic type mapping (e.g. chp. 5.4 – pg. 77 – Note: duality of decision in type resolution as in Chambers' splitting predicates is equivalent to dual type provision by Bosworth) and discloses SELF being written in dynamically-typed programming language. It would have been obvious for one of ordinary skill in the art at the time the invention was made to apply the object-oriented programming dynamic binding used by Bosworth in program written in dynamically-typed language as taught by Chambers because only dynamic typed language need optimization in late binding in addition to known complications that come with polymorphism and parent-child hierarchy mapping drawbacks in OO language ( see Chambers Introduction pg. 58; and also in instant Invention Specifications, as admitted prior art – see Specifications, pg. 5-9).

Bosworth ( in conjunction with Chambers/Stein\_cshl) discloses whether object is already provided for use with runtime lookup (*runtime* - col. 4, lines 45-50) but does not explicitly

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disclose a runtime an access control level wherein a public member and a private member have different access rights. Official notice is taken that object-oriented declaring public and private attribute or keyword for dictating access right control over classes defined with different access rights was a well-known concept at the programming language at the time the invention was made. Stein\_cshl discloses an illustration of object-oriented runtime provision/class to throw runtime exception when determining violation of access of private members at runtime (e.g. *class is not public* - see pg. 1-2). Hence, in view of the object-oriented aspect and the rationale to use the optimized binding technique as set forth in Bosworth runtime binding from above, it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a runtime access violation provision as taught by Stein\_cshl, because this OO runtime Exception form of control would further enforce access control set not only at static declaration by dynamically at execution time in order to throw appropriate exception lest a violation of resources at runtime would otherwise engender further serious memory violation had such exception not been thrown.

**As per claim 2**, Bosworth ( in conjunction with Chambers/Stein\_cshl) discloses that object member is a class member of said dynamically typed programming language ( e.g. Fig. 3B).

**As per claim 3**, Bosworth ( in conjunction with Chambers/Stein\_cshl) discloses that object member is a class method ( e.g. Fig. 3b; col. 11, line 28 to col. 12, line 59).

**As per claim 4**, Bosworth ( in conjunction with Chambers/Stein\_cshl) discloses that the class method is a virtual method ( e.g. step 712 – Fig. 7; step 808 - Fig. 8).

**As per claim 6**, Bosworth discloses a computer useable medium having computer readable program code embodied therein configured to bind an object member at runtime, said computer program product comprising computer readable code configured therein to cause a computer to perform the steps:

to declare (object member...);

to determine (... object member is used); and

to bind (object member to its reference) exactly as recited in claim 1 above. Hence these above limitations are rejected with the corresponding rejection as set forth above therein.

But Bosworth does not disclose a dynamically-typed programming language nor does Bosworth explicitly disclose a runtime an access control level wherein a public member and a private member have different access rights. But these limitations have been addressed in claim 1 above.

**As per claims 7-9**, these claims correspond to claims 2-4, respectively, hence are rejected with the corresponding rejections as set forth therein.

#### ***Response to Arguments***

4. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan A Vu whose telephone number is (272) 272-3735. The examiner can normally be reached on 8AM-4:30PM/Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571)272-3719.


The fax phone number for the organization where this application or proceeding is assigned is (571) 273-3735 ( for non-official correspondence – please consult Examiner before using) or 703-872-9306 ( for official correspondence) or redirected to customer service at 571-272-3609.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VAT  
April 30, 2005

  
KAKALI CHAKI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100